



Air Quality Permitting Statement of Basis

April 4, 2007

**Permit to Construct No. P-060325
and
Tier I Operating Permit No. T1-2007.0035**

**Ash Grove Cement Company
Inkom, ID**

Facility ID No. 005-00004

Prepared by:

Ken Hanna, Permit Writer
AIR QUALITY DIVISION

Proposed PTC and Tier I Amendment for Public Comment

Table of Contents

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURES	3
1. PURPOSE	4
2. FACILITY DESCRIPTION.....	4
3. FACILITY / AREA CLASSIFICATION	5
4. APPLICATION SCOPE	5
5. PERMIT ANALYSIS	5
6. PERMIT FEES.....	10
7. PERMIT REVIEW.....	10
8. RECOMMENDATION	11
APPENDIX - EMISSIONS INVENTORY	12

Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CAA	Clean Air Act
CFR	Code of Federal Regulations
CKD	cement kiln dust
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscfm	dry standard cubic feet per minute
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic feet
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
lb/ton	pound per ton
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
SIP	State Implementation Plan
SM	Synthetic Minor
SO ₂	sulfur dioxide
T/yr	tons per year
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct, and IDAPA 58.01.01.300 for issuing Tier I operating permits.

2. FACILITY DESCRIPTION

Ash Grove Cement Company (Ash Grove) manufactures Portland cement. The Inkom facility is located adjacent to the quarry from which raw limestone, MgO limestone, clay, and shale are mined. The raw materials are removed from the bedrock by blasting with explosives, then bulldozing the rock to the quarry floor, and hauling the rock to the jaw crusher. The silica and iron ore are hauled to the plant and stockpiled. These materials are also crushed as needed.

The mined material is usually too large to be used in cement manufacturing at this point, so further processing is required. Material enters a crusher and is screened until the appropriate size is obtained. When the rock reaches the desirable size it is transported by a conveyor belt to storage silos for later use in the cement making process. The rock from the silos is measured, and then transported to a ball mill by conveyor belts. The material is ground, forming homogeneous slurry of water and rock.

The slurry is fed to the back of the kiln, which declines at a 4% slope. In order to form clinker the slurry must be heated to incipient fusion where calcination takes place. To perform the energy intensive task of making clinker, gases flowing counter current to the material flow are heated to an excess of 1650°C (3,000°F) by fossil and used fuels. Currently, the primary fuels used by the Inkom plant kiln are coal and whole tires.

The chemically reacting raw materials reach a temperature of approximately 1538°C (2800°F) before exiting the kiln and entering the clinker cooler.

The clinker exits the kilns at temperatures of 2000°F. It enters clinker coolers beneath the kiln where the heat is transferred from the clinker to the secondary air that reenters the kiln. All the forced air entering the cooler is utilized in the kiln as primary and secondary air for fuel combustion. The clinker leaves the cooler at around 260°C (500°F). Drag chains, elevators, and conveyor belts are used to transport the warm clinker from the clinker cooler to clinker storage.

The clinker is transported from the storage areas to the three finish ball mills where it is ground with gypsum to make cement. Separators are used to return oversized particles back to the mills for additional grinding. The plant can grind 450,000 tons of clinker per year. The cement is then pneumatically conveyed to the cement storage silos. Upon withdrawal from the silos, the cement is shipped bulk to customers.

Ash Grove employs two electrostatic precipitators (ESPs) to control particulate matter emissions from its two cement kilns. The dust that is collected by the ESPs is referred to as cement kiln dust or “CKD”.

3. FACILITY / AREA CLASSIFICATION

The facility is a designated facility as defined in IDAPA 58.01.01.006.27 (Portland Cement Plant). The AIRS Facility Subsystem classification is “A” because potential emissions of PM₁₀, SO₂, NO_x, and CO are greater than 100 tons per year. The facility is a major facility for PSD permitting purposes, because the facility’s PTE is greater than 100 T/yr. This facility is a portland cement manufacturer, SIC code 3241. Ash Grove is located in AQCR 61 in Bannock County. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants (PM₁₀, SO_x, O₃, NO₂, CO, and Pb). There are no class I areas within 10 km of the facility. A revised AIRS table is not included with this statement of basis since there are no changes to this table as a result of this project.

4. APPLICATION SCOPE

Ash Grove has applied for a PTC modification to construct a cement kiln dust (CKD) handling system and to increase the permitted amount of CKD that can be stored on the plant site near the limestone quarry.

4.1 Application Chronology

September 6, 2006 PTC and Tier I operating permit application received
September 14, 2006 Emissions inventory information was received
September 29, 2006 The permit applications were declared complete
March 15, 2007 Draft permit documents were issued to Ash Grove for review
March 22, 2007 Comments were received from Ash Grove

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Emissions Inventory

Estimated PTE Changes

Ash Grove estimated the emissions in the permit application for all sources included in this modification. The total estimated potential emissions from this project are summarized in Table 5.1 below. The estimated emissions were reviewed and found to be consistent with DEQ methods and procedures. Details are provided in the Appendix.

Table 5.1 ESTIMATED POTENTIAL EMISSIONS

Source	PM		PM ₁₀	
	lb/hr	tons/yr	lb/hr	tons/yr
Process Fugitives	1.99	0.61	0.56	0.17
Baghouses	0.46	2.00	0.46	2.00
Road Fugitives	---	0.59	---	0.15
Pile Fugitives	---	0.97	---	0.47
Project Total	2.45	4.17	1.01	2.79

Since Ash Grove is classified as a major facility under the PSD program, emission estimates are also needed to determine if the proposed modification is a “major modification.” The estimates needed for this particular analysis are based on “actual emissions” instead of potential emissions. This information is summarized in Tables 5.2 and 5.3 below.

Table 5.2 MAJOR MODIFICATION TEST FOR EXISTING AND NEW UNITS - PM₁₀ (tons/yr)

Source	2004-05 Average Throughput	Proposed Throughput ^a	Baseline Actual Emissions	Projected Actual Emissions	Project Increase ^b
Process Fugitives	4,425	24,528	0.18	0.17	0.00
Baghouses	---	---	0	2.00	2.00
Road Fugitives	---	---	0.03	0.15	0.12
Pile Fugitives	4,425	24,528	0.23	0.47	0.24
Project Total	---	---	---	---	2.36
Significant Emission Rate	15				
Does increase exceed Significant?	No				

^a Note that the 20,000 ton difference between baseline and future throughput values reflects CKD diverted from the leach system to the pneumatic system, not an increase in CKD production. This project only includes changes in the manner in which CKD is handled, and other processes at the facility are not changed as a result of this project.

^b The increase in emissions for the project is based on the sum of the emissions “increases” for each emissions unit. Decreases are not counted at this stage of the review consistent with EPA guidance for “project netting.” If netting were conducted, credit could be taken for the decreases.

Table 5.3 MAJOR MODIFICATION TEST FOR EXISTING AND NEW UNITS - PM (tons/yr)

Source	2004-05 Average Throughput	Proposed Throughput	Baseline Actual Emissions	Projected Actual Emissions	Project Increase
Process Fugitives	4,425	24,528	0.66	0.61	0.00
Baghouses	---	---	0	2.00	2.00
Road Fugitives	---	---	0.11	0.59	0.48
Pile Fugitives	4,425	24,528	0.48	0.97	0.49
Project Total	---	---	---	---	2.97
Significant Emission Rate	25				
Does increase exceed Significant?	No				

5.2 Modeling

Modeling is not required for this project because the emissions increase was found to be sufficiently close to the modeling threshold such that modeling is not necessary. Note that the modeled impacts for the entire facility, including impacts from this project, are also currently under review as part of the Tier II operating permit renewal project.

5.3 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201.....Permit to Construct Required

A permit to construct is required prior to construction or modification of any stationary source, facility, major facility, or major modification unless the source is exempt per IDAPA 58.01.01.220-223. For this project, the facility has requested a PTC and Tier I amendment, and this will be done using the procedures under IDAPA 58.01.01.209.05.c.

IDAPA 58.01.01.205. [40 CFR 52.21] Permit Requirements for New Major Facilities or Major Modifications in Attainment of Unclassifiable Areas

IDAPA 58.01.01.205.01 [40 CFR 52.21(a)(2)(iv)]. This project to modify the CKD handling operations is not a major modification based on the following analysis.

A project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases - a significant emissions increase and a significant net emissions increase. The project is not a major modification if it does not cause a significant emissions increase. These rules specify a two part test to make this determination. The first test is used to determine if the project will cause a significant emissions increase, and this is given by 52.21(a)(2)(iv)(b) through (f). The second test, if required, is used to determine if the project will cause a significant net emissions increase, and this is given by 52.21(a)(2)(iv)(b) and 52.21(b)(3).

The “project”, as defined by 52.21(b)(52) means “a physical change in, or change in the method of operation of, an existing major stationary source.” For purposes of this analysis, the “project” includes changes associated with the following processes, and no other processes at the facility would be affected by this project:

- Fugitive dust sources associated with CDK handling processes (process fugitives)
- Point source emissions from existing baghouse BH11 and from new baghouses BH12, BH13, and BH14
- Fugitive dust sources associated with unpaved roads
- Fugitive dust from the CKD storage pile

For the “existing emissions units” (i.e., all units listed above except for BH12, BH13, and BH14), the test under 40 CFR 52.21(a)(2)(iv)(c) is used for the first test to determine if the project is significant. This regulation reads as follows:

A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions (as defined in [40 CFR 52.21(b)(41)]) and the baseline actual emissions (as defined in [40 CFR 52.21 (b)(48)(i) and (ii)]), for each existing emissions unit, equals or exceeds the significant amount for that pollutant (as defined in [40 CFR 52.21(b)(23)]).

For the “new emissions units” (i.e., BH12, BH13, and BH14), the test under 40 CFR 52.21(a)(2)(iv)(d) is used for the first test to determine if the project is significant. This regulation reads as follows:

A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit (as defined in [40 CFR 52.21 (b)(4)] from each new emissions unit following completion of the project and the baseline actual emissions (as defined in [40 CFR 52.21 (b)(48)(iii)]) of these units before the project equals or exceeds the significant amount for that pollutant (as defined in [40 CFR 52.21 (b)(23)]).

Then, since this project includes both new and existing emissions units, the “hybrid test” under 40 CFR 52.21(a)(2)(iv)(f) is used for the first test to determine if the project is significant. This regulation reads as follows:

A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the emissions increases for each emissions unit, using the method specified In [40 CFR 52.21(a)(2)(iv)(c) through (e)] as applicable with respect to each emissions unit, for each type of emissions unit equals or exceeds the significant amount for that pollutant (as defined in [40 CFR 52.21(b)(23)]). For example, if a project involves both an existing emissions unit and a Clean Unit, the projected increase is determined by summing the values determined using the method specified in [40 CFR 52.21(a)(2)(iv)(c)] for the existing unit and using the method specified in [40 CFR 52.21(a)(2)(iv)(e)] for the Clean Unit.

This analysis was performed by the applicant and a summary of the results is provided in Tables 5.2 and 5.3 in the Emissions Inventory Section above. The results show that, for each regulated NSR pollutant,

the sum of the emissions increases for all emissions units included in this project will be less than the significant amount for that pollutant. The applicant's analysis was reviewed by DEQ and found to be consistent with DEQ methods. In summary, the results show that the project will not cause a significant emissions increase and, therefore, netting is not necessary and the project is not a major modification.

40 CFR 52.21(r)(6) establishes monitoring requirements for "*projects at an existing emissions unit at a major stationary source in circumstances where there is a reasonable possibility that a project that is not a part of a major modification may result in a significant emissions increase and the owner or operator elects to use the method specified in paragraphs (b)(41)(ii)(a) through (c) of this section for calculating projected actual emissions.*" Section (r)(6) does not apply to this project for the following reasons. There is not a reasonable possibility that this project to modify the CKD handling operations would result in a significant emissions increase because the potential emissions from the project are far below the significant emissions rates for PM and PM₁₀ (e.g., see Tables 5.1 - 5.3 above). Also the project does not de-bottleneck or increase emissions from other processes at the facility (e.g., the kiln processes or the cement processing line).

IDAPA 58.01.01.209.05.c, 381Permit to Construct Procedures for Tier I Sources

This PTC modification is for a Tier I source, therefore, the PTC must be processed according to the procedures for a Tier I source. In particular, this PTC will be processed according to Section 209.05.c as requested by the facility to minimize delays for issuing the amended Tier I. The draft PTC will meet both PTC and Tier I requirements including public comment, affected state and tribal review per Sections 209, 364, and 365. The proposed PTC will also be sent to EPA for review, concurrently with the 30-day comment period, per Sections 209.05.c and 366.

The permittee may at any time after issuance of the PTC, request that the PTC requirements be incorporated into the Tier I operating permit through an administrative amendment in accordance with Section 381. It is noted that in the PTC application, Ash Grove has requested that the PTC be issued to modify the existing Tier I and Tier II permits.

IDAPA 58.01.01.382.01.....Significant Permit Modification

This project is a Tier I significant modification since the proposed increases in throughput limits would contradict throughput limits in the existing Tier I permit. Also, the change is subject to the provisions of this section per IDAPA 58.01.01.382.01(e), because the change constitutes a modification under a provision of Title I of the Clean Air Act.

IDAPA 58.01.01.700.....PM - Process Weight Limitations

For new equipment, the PM process weight limitations are based on the equations given by IDAPA 58.01.01.701, and this standard is already included as a permit condition in Ash Grove's Tier II operating permit. It is noted that under IDAPA 58.01.01.700.02, no source is required to meet an emission limit of less than one pound per hour. Since the potential emissions for sources with this project, as shown in Table 5.1 above, are less than 1 lb/hr, no further analysis is necessary.

40 CFR 60 Subpart FStandards of Performance for Portland Cement Plants

Applicability of Subpart F was extended to the new baghouses and CKD handling system in addition to the existing equipment it already applied to. This includes requirements for initial performance testing (opacity) for the new equipment (new affected facilities) per 60.8, 60.62(c) and 60.64(b)(4), and initial notification(s) per 60.7. Any other applicable requirements, including but not limited to notifications, monitoring, recordkeeping, etc., including those in Subpart A, will also need to be complied with for these new sources.

40 CFR 63 Subpart LLLNational Emission Standards for Hazardous Air Pollutants
from the Portland Cement Manufacturing Industry

The Tier I operating permit statement of basis classifies the Ash Grove Inkom facility as an area source of HAPs. Therefore, no requirements of the NESHOAP (40 CFR 63 Subpart LLL) are applicable to the kiln dust handling systems. The only affected units at an area source are the kilns.

40 CFR Part 64.....Compliance Assurance Monitoring (CAM)

Since the project is at a major source that has a Part 70 permit (Tier I), and the new sources are subject to emission limitations or standards (e.g., NAAQS, NSPS), and new control devices are used to achieve compliance (BH12, BH13, and BH14), then applicability of Part 64 to each of those control devices needs to be determined according to 40 CFR 64.2. As shown below, the “potential pre-control device emissions” of PM from each baghouse is less than 100 tons/yr, the Part 70 major source threshold. For purposes of this determination, the maximum CKD throughput of 25,000 tons/yr and the PM emission factor from Table 11.12-2 for uncontrolled emissions from cement supplement unloading to an elevated storage silo (pneumatic) was used since it is representative of the emissions from these CKD sources.

Uncontrolled PM = (3.14 lb PM per ton CKD) x (25,000 tons CKD per year) x (ton/2000 lbs) = 39 TPY

5.4 Permit Conditions Review

This section describes only those permit conditions that have been revised, modified or deleted as a result of this permit action. All other permit conditions remain unchanged.

PTC Conditions 2.4, 2.5, 2.8 - 2.11, and Tier I Section 16

Emission rate limits for each control device (fabric filters BH11, BH12, BH13, and BH14) were established to be consistent with the analysis performed to show NAAQS for the facility (refer to the Modeling Section above). Compliance with these limits is demonstrated by operating and monitoring conditions written to show that the control devices are maintained in good working order and operated as efficiently as practicable per PTC General Provision 2. This includes provisions for periodically monitoring and recording the pressure drop across the filters, periodic visible emissions observations of the filter stacks, and requirements to operate, inspect and maintain the equipment as set forth in a Dust Collector Maintenance Plan.

PTC Condition 2.6 and Tier I Section 16

The permit condition which addresses the NSPS opacity requirement for conveyor transfer points and bulk loading and unloading systems under 40 CFR Part 60 Subpart F was revised to include the new and modified sources in the CKD handling system.

PTC Condition 2.7; Condition 3.6 in Section 7 (Storage Piles) and Conditions 2.2, 3.2, 4.1 and 5.1 in Section 15 (Cement Kiln Dust Handling) of the November 27, 2002 Tier II Permit; and Conditions 8.7, 16.3, 16.5, 16.7 and 16.8 of the November 6, 2006 Tier I Permit

To more effectively control fugitive dust emissions from CKD handling operations and assure that actual fugitive dust emissions are consistent with the estimates used to demonstrate compliance with the NAAQS, the following changes were made. The fugitive dust emission limits and waste storage pile transfer limits were removed and replaced by requirements for Ash Grove to develop and implement a Fugitive Dust Control Plan which specifically addresses all sources associated with those operations. Also, the size limit for the CKD storage pile was increased to 2 acres (Tier II Condition 3.6, Section 7).

Condition 2.7 of the November 27, 2002 Tier II Permit

The visible emissions standard set for the by IDAPA 58.01.01.625 applies to all point sources regardless

of whether or not the condition is included in a PTC. Also, this condition already exists in the Ash Grove Tier I operating permit, therefore, it was not included in this PTC.

Tier I Condition 10.1.1

The short term CO emission rate limits for kilns 1 and 2 are changed to be 550 lb/hr and 650 lb/hr respectively. Also to clarify the averaging time, this was changed to be based on a 1-hour “block average” instead of just a 1-hr average. These limits were established as applicable requirements in Permit Condition 2.1.2 of Section 9 (No. 1 and No. 2 Rotary Kilns) of the Tier II operating permit issued on November 27, 2002. This is also set forth in paragraph 7 of the June 13, 2003 Stipulation for Dismissal with Prejudice, Docket No. 0101-03-04.

Tier I Summary Tables 3.2, 4.2, 7.2, 8.2, 9.2, 15.2 and 16.2

The Tier I summary Tables are revised to mirror modified permit conditions.

6. PERMIT FEES

A PTC application fee of \$1,000.00 applies in accordance with IDAPA 58.01.01 224, and this fee was received on September 9, 2006. A PTC processing fee of \$2,500.00 was assessed in accordance with IDAPA 58.01.01.225 since the modification has an increase of emissions of one to ten tons/yr (see Table 6.1). Since this is a major facility, Tier I fees are also applicable. As of March 15, 2007, Ash Grove is current with the Tier I fees.

Table 6.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM ₁₀	2.4	0	2.4
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	2.4
Fee Due	\$ 2,500.00		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permits

A facility draft PTC which includes proposed modifications to the Tier I operating permit was sent to the DEQ Pocatello Regional Office on March 15, 2007 for review.

7.2 Facility Review of Draft Permits

A facility draft PTC which includes proposed modifications to the Tier I operating permit was provided to Ash Grove for review via email on March 15, 2007. Comments were received on March 22, 2007, and then minor changes were made to the draft permit.

7.3 Public Comment

In accordance with IDAPA 58.01.01.209.05(c) and 364, a 30-day comment period will be provided for the public, affected states and tribes on the draft PTC and the Tier I operating permit amendment.

IDAPA 58.01.01.008.01 defines affected states as: “All states: whose air quality may be affected by the emissions of the Tier I source and that are contiguous to Idaho; or that are within 50 miles of the Tier I source.” A review of the site location information included in the permit application indicate that the facility is located within 50 miles of tribal land. Therefore, the Fort Hall Indian Reservation will be provided an opportunity to comment on the draft PTC and the Tier I operating permit amendment. The state of Utah is located 53 miles from the facility and is not subject to notification. The EPA will also be provided with an opportunity to comment on the proposed Tier I amendment, and this will occur concurrently with the 30-day comment period in accordance with IDAPA 58.01.01.209.05.c.iv and 366.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that draft PTC No. P-060325, including the draft Tier I modifications, for the kiln dust handling systems be issued for Public Comment. The project does not involve PSD requirements.

KH/bf Permit No. P-060325 and Permit No. T1-2007.0035

G:\Air Quality\Stationary Source\Permitting Process\Facilities\Ash Grove.Inkom\P-060325\P-060325.PC.SB.doc

Appendix

Emissions Inventory

CKD Throughput			
Baseline			Proposed
2004	2005	Average	
4,499	4,351	4,425	24,528

PROCESS FUGITIVES

Projected Actual Emissions

SOURCE DESCRIPTION		THROUGHPUT			EMISSION FACTORS ¹		CONTROL			EMISSIONS			
NAME FROM	NAME TO	HRS /YR	MAX. TON/H	TON/YR	TSP LB/TON	PM10 LB/TON	MOIST.	CAPT.	BUILD.	TSP LB/HR	T/YR	PM10 LB/HR	T/YR
Emissions associated with all CKD disposal options													
K1 ESP	A SCREW	8,760	1.0	8,760	0.995	0.278	0%	0%	100%	0.000	0.000	0.000	0.000
K2 ESP	A SCREW	8,760	1.8	15,768	0.995	0.278	0%	0%	100%	0.000	0.000	0.000	0.000
CKD Disposal Option 1: Turbulator to truck or railcar wet and haul away													
CKD SILO 2	TURBULATOR	8,760	40	24,528	0.995	0.278	0%	0%	100%	0.000	0.000	0.000	0.000
TURBULATOR	TRUCK OR RAILCAR	8,760	40	24,528	0.995	0.278	85%	95%	0%	0.299	0.092	0.083	0.026
Total Option 1										0.299	0.092	0.083	0.026
CKD Disposal Option 2: Dump to truck or railcar dry and haul away													
CKD SILO 2	SPOUT	8,760	40	24,528	0.995	0.278	0%	0%	100%	0.000	0.000	0.000	0.000
SPOUT	TRUCK OR RAILCAR	8,760	40	24,528	0.995	0.278	0%	95%	0%	1.990	0.610	0.556	0.170
Total Option 2										1.990	0.610	0.556	0.170
CKD Disposal Option 3: Turbulator to truck wet and stockpile in quarry													
CKD SILO 2	TURBULATOR	8,760	40	24,528	0.995	0.278	0%	0%	100%	0.000	0.000	0.000	0.000
TURBULATOR	TRUCK	8,760	40	24,528	0.995	0.278	85%	95%	0%	0.299	0.092	0.083	0.026
Total Option 3										0.299	0.092	0.083	0.026
Maximum disposal option:										1.990	0.610	0.556	0.170
TOTAL										1.99	0.61	0.56	0.17

Baseline Actual Emissions

SOURCE DESCRIPTION		THROUGHPUT			EMISSION FACTORS ¹		CONTROL			EMISSIONS			
NAME FROM	NAME TO	HRS /YR	MAX. TON/H	TON/YR	TSP LB/TON	PM10 LB/TON	MOIST.	CAPT.	BUILD.	TSP LB/HR	T/YR	PM10 LB/HR	T/YR
K1 ESP	SCREW	1,949	1.0	1,949	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
SCREW	ELEVATOR	1,949	1.0	1,949	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
ELEVATOR	SCREW	1,949	1.0	1,949	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
SCREW	SCREW	1,949	1.0	1,949	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
SCREW	TURBULATOR	1,949	1.0	1,949	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
TURBULATOR	TRUCK	1,949	1.0	1,949	0.995	0.278	70%	0%	0%	0.30	0.29	0.08	0.08
K2 ESP	SCREW	1,376	1.8	2,476	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
SCREW	SCREW	1,376	1.8	2,476	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
SCREW	ELEVATOR	1,376	1.8	2,476	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
ELEVATOR	SCREW	1,376	1.8	2,476	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
SCREW	TURBULATOR	1,376	1.8	2,476	0.995	0.278	0%	0%	100%	0.00	0.00	0.00	0.00
TURBULATOR	TRUCK	1,376	1.8	2,476	0.995	0.278	70%	0%	0%	0.54	0.37	0.15	0.10
TOTAL										0.84	0.66	0.23	0.18

1. AP-42 Table 11.12-2, June 2006, Uncontrolled Truck Loading

C:\Documents and Settings\khanna.000\Local Settings\Temporary Internet Files\OLK2\FCKD Projected Emissions 083106_sent.xls

BAGHOUSES

Projected Actual Emissions

ID No.	Area served	Flow Rate acfm	Temperature deg. F	Emission Factor		Operating Hours hrs/yr	Emissions			
				PM gr/dscf	PM10 gr/dscf		PM		PM ₁₀	
							lb/hr	ton/yr	lb/hr	ton/yr
B12	CKD SILO 1 (bin vent)	2,400	68	0.010	0.010	8,760	0.21	0.90	0.21	0.90
B13	CKD SILO 2 (bin vent)	1,680	68	0.010	0.010	8,760	0.14	0.63	0.14	0.63
B14	CKD TRUCK LOADOUT	1,250	68	0.010	0.010	8,760	0.11	0.47	0.11	0.47
TOTAL							0.46	2.00	0.46	2.00

C:\Documents and Settings\Whanna.000\Local Settings\Temporary Internet Files\OLK2F\CKD Projected Emissions 083106_sent.xls

UNPAVED ROADS

Projected Actual Emissions

Segment No.	Segment Length (mi)	Truck Trips		Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	TSP			PM-10		
		Empty	Loaded				Empty Emissions (T/yr)	Loaded Emissions (T/yr)	Total Emissions (T/yr)	Empty Emissions (T/yr)	Loaded Emissions (T/yr)	Total Emissions (T/yr)
D	0.10	x	x	245	245	491	0.05	0.06	0.11	0.01	0.02	0.03
3P	0.20	x	x	491	491	981	0.10	0.13	0.22	0.02	0.03	0.06
CKD	0.10	x	x	245	245	491	0.05	0.06	0.11	0.01	0.02	0.03
3S	0.13	x	x	319	319	638	0.06	0.08	0.14	0.02	0.02	0.04
TOTAL									0.59			0.15

Baseline Actual Emissions

Segment No.	Segment Length (mi)	Truck Trips		Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	TSP			PM-10		
		Empty	Loaded				Empty Emissions (T/yr)	Loaded Emissions (T/yr)	Total Emissions (T/yr)	Empty Emissions (T/yr)	Loaded Emissions (T/yr)	Total Emissions (T/yr)
D	0.10	x	x	44	44	89	0.01	0.01	0.02	0.00	0.00	0.01
3P	0.20	x	x	89	89	177	0.02	0.02	0.04	0.00	0.01	0.01
CKD	0.10	x	x	44	44	89	0.01	0.01	0.02	0.00	0.00	0.01
3S	0.13	x	x	58	58	115	0.01	0.01	0.03	0.00	0.00	0.01
TOTAL									0.11			0.03

Emission Factor Calculation

Truck Weights			Projected		Baseline		
Empty (Tons)	Loaded (Tons)	Material Net (Tons)	Material (T/yr)	Material Trips (#/yr)	Material (T/yr)	Material Trips (#/yr)	
11	21	10	24,528	2,453	4,425	443	
Silt %	Rain Days (year)	MgCL Water Control %	TSP Empty Trucks lb/VMT	TSP Loaded Trucks lb/VMT	PM-10 Empty Trucks lb/VMT	PM-10 Loaded Trucks lb/VMT	
5.5	90	90	0.39	0.52	0.10	0.14	

Reference: AP-42 Section 13.2.2, Unpaved Roads, December 2003.

C:\Documents and Settings\Whanna.000\Local Settings\Temporary Internet Files\OLK2\FCKD Projected Emissions 083106_sent.xls

PILE

Projected Actual Emissions

Area	Pile Num.	Pile Area (Acres)	Material Throughput (T/yr)	TSP			PM ₁₀			TSP Total Emissions (T/yr)	PM ₁₀ Total Emissions (T/yr)
				Transfer Factor (lb/Ton)	Transfer Emissions (T/yr)	Wind Emissions (T/yr)	Transfer Factor (lb/Ton)	Transfer Emissions (T/yr)	Wind Emissions (T/yr)		
Quarry	7	2.00	24,528	0.00048	0.0059	0.96	0.00017	0.00	0.4675	0.97	0.47

Baseline Actual Emissions

Area	Pile Num.	Pile Area (Acres)	Material Throughput (T/yr)	TSP			PM ₁₀			TSP Total Emissions (T/yr)	PM ₁₀ Total Emissions (T/yr)
				Transfer Factor (lb/Ton)	Transfer Emissions (T/yr)	Wind Emissions (T/yr)	Transfer Factor (lb/Ton)	Transfer Emissions (T/yr)	Wind Emissions (T/yr)		
Quarry	7	1.00	4,425	0.00048	0.0011	0.48	0.00017	0.00	0.2338	0.48	0.23

Assumptions:

- 10.2 mph, Average Wind Speed
- 15 % Material Moisture
- 90 Rain Days per Year
- 3.5 lb TSP per acre per day, Wind Factor
- 1.7 lb PM₁₀ per acre per day, Wind Factor
- Assumed no wind erosion on rain days.

C:\Documents and Settings\Whanna.000\Local Settings\Temporary Internet Files\OLK2\FCKD Projected Emissions 083106_sent.xls